Name _____

Making Aquariums!

Get your team's Bottle 3 (aquarium). Visit the supply area, get the materials listed below and return to your work area.

- ❒ Cup with 3 droppers full algae
- ❒ *Elodea* (1 sprig)
- ❒ Duckweed (10 plants)
- ❒ Dropper
- ❒ Hand lens
- ❒ Marker
- ❒ Paper towels
- ❒ Ruler

Now let's build an aquarium — an aquatic ecosystem! Remember, good scientists record their observations, questions and ideas. Get your bottles from Lesson 5.

1. Put one cup of gravel in the bottom of the bottle you marked #3 (aquarium).

2. Following your teacher's direction, use the same cup (now empty!) to fill your aquarium with special water. Stop when the water is 4 cm from the top — no higher!

3. Above the chart, in the upper right hand corner of the page, record how many cups of water you used to fill the aquarium. Then use the marker to mark the water level on the outside of the bottle.

4. Measure and record on the chart the size of 1-2 sprigs of *Elodea*. Use your hand lens to look at them closely. Record your observations on the chart. Then put them in the aquarium.

5. Add the 10-15 duckweed plants to the aquarium. They will float on the surface of the water. You can count them more easily once they are floating.

6. Using the dropper, add the algae to your aquarium.

7. Turn over the paper that has the chart. On the blank side, draw a picture of your aquarium. Watch carefully! Use a hand lens to observe closely. Then write two good questions or ideas you have.

LET'S ADD AQUATIC ANIMALS!

Put your aquarium at your work area. Leave it there while you and your partner visit the supply area. Take one copy of this page with you. One of you will read the instructions on this page while the other gets the supplies. Be sure to take turns.

1. Pick up a clear plastic cup. Use it to dip two inches of water from the holding tank.

2. Using a spoon, gently dip two snails out of the holding tank. Put them in your cup.

3. Use a net to catch two mosquito fish. Slowly turn the net inside out and gently touch it on the surface of the water in your plastic cup. The fish will fall into the water and begin to swim.

4. Return to your work area. Use your hand lens to watch the new animals in your plastic cup. Notice as much about them as you can — their size, shape, color, and movements. Record your observations in the chart.

5. Using the dropper put some water from your aquarium into the plastic cup. Continue to add water from your aquarium to the cup, a little at a time, until the cup is about half full. By doing this, you help the animals get used to the conditions they will soon find in their new home — your aquarium!

6. Gently pour the animals into your aquarium. Pouring too quickly can hurt the animals.

7. Use your hand lens to observe the animals in your aquarium. Add any new observations to your chart.

8. Turn over the paper that has the chart on it. Draw a picture of your aquarium, showing all of the living and non-living things that are there. Add words or phrases to describe what you see happening.

9. Below your picture, write two good ideas or questions you have about aquariums, aquatic plants, or aquatic animals.

Name _____ # cups water used: _____

Good scientists keep track of their work. Use the chart below to record your observations as you add plants and animals to your aquarium.

Aquarium Observation Chart

	Amount/Size	Description	Other Observations
Algae			
Duckweed			
Elodea			
Snails			
Mosquito Fish			

When you have added all the plants and animals, use the other side of this paper to draw a picture of your aquarium. Use words to describe what you see happening. Then write two good ideas or questions you have.

Slow And Steady Snails!

Has anybody ever told you that you were as slow as a snail? Snails may be slow but they are amazing animals. They are found all around the world, and there are many different kinds. Most have hard shells that protect their soft bodies. If you look at one of your snails, you can see part of its body sticking out from the shell. This part is called the snail's "foot." The muscles in the "foot" help the snail move. The "foot" also releases a thin, slimy film — sometimes called, "mucus." The snail glides along on this film.

Look at the head (on the foot!) of your snail. You can see two tentacles. At the end of each one is an eye. Snails can move their tentacles back and forth. They do not see well, but they can tell the difference between light and dark. Snails cannot hear, and they make no noise.

The snail's mouth is under its head. Yes! It walks on its mouth. You can see the mouth when your snail glides along the side of the aquarium. Inside its mouth is a tongue. The tongue has tiny "teeth" on it. These help the snail "chew" its food.

If you are lucky, you may find snail eggs in your aquarium. The eggs are laid in a jellylike mass, often near the water's surface. If you use your hand lens to look at an egg, you can see a very tiny snail inside. As the days go by, the tiny snail gets bigger and bigger, until finally it comes out of its egg and begins to move freely in the aquarium. Baby snails use calcium to make their own shells.

These snails eat the tissues of dead plants and animals. They also eat live algae and live plants. Snails can be eaten by other animals — fish, turtles, ducks, large insects, and mammals.

Sometimes it is good to follow the snail's habit: Slow and steady! Take your time!

Rough and Ready Mosquito Fish!

Mosquito fish live in the southeastern United States. They are very tough. They can live in warm or cold water, in ditches, ponds, streams, or even mud holes. They are very aggressive and drive out other fish that try to live in their space.

Mosquito fish get their name from their favorite food. How can a fish catch an insect that flies? They eat young "wrigglers," tiny worm-like baby insects that live in the water. The "wrigglers" have no wings, so mosquito fish can catch them easily. They also like to eat *Elodea* — or any small living thing.

People have brought mosquito fish into more than 70 countries to lower the number of mosquitoes. Some mosquitoes carry diseases. Have you heard of malaria or the West Nile virus? Mosquitoes can transmit either of these diseases to humans.

All mosquito fish have large eyes and see well. You can see overlapping scales on their skin with your hand lens. Look on a fish's side for a lateral line, which runs the length of its body. It has sensitive nerve endings that can detect pressure in the water. They help a fish maintain its position in the water, and probably also help it know whether it is in deep or shallow water. Mosquito fish breathe by pumping water through their mouth and over their gills. Watch your fish's gills move. How many breaths does your fish take in one minute? How many do you take?

The fish in your aquarium might be adult males, adult females, or young mosquito fish called fry. Use the chart below to tell the age and sex of your fish.

	Adult Female	Adult Male	Fry
Color	Pale grayish blue	Pale gray, sometimes with blue sheen on the body when light hits it	Pale and transparent
Size	**Larger** than male Can be up to 6 cm	**Smaller** than female Can be up to 3.5 cm	**Very tiny** 1 cm at birth!
Shape	Fins and tail are round Body is **plump**	Fins and tail are round Body is **slim**	Body is **plump** like female's
Markings	Dorsal fin and tail often marked with rows of tiny dots. May also have a **black spot** on her tail.	Dorsal fin and tail often marked with rows of tiny dots. **No black spot** on tail.	No obvious markings! (Can you guess why?)